

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets

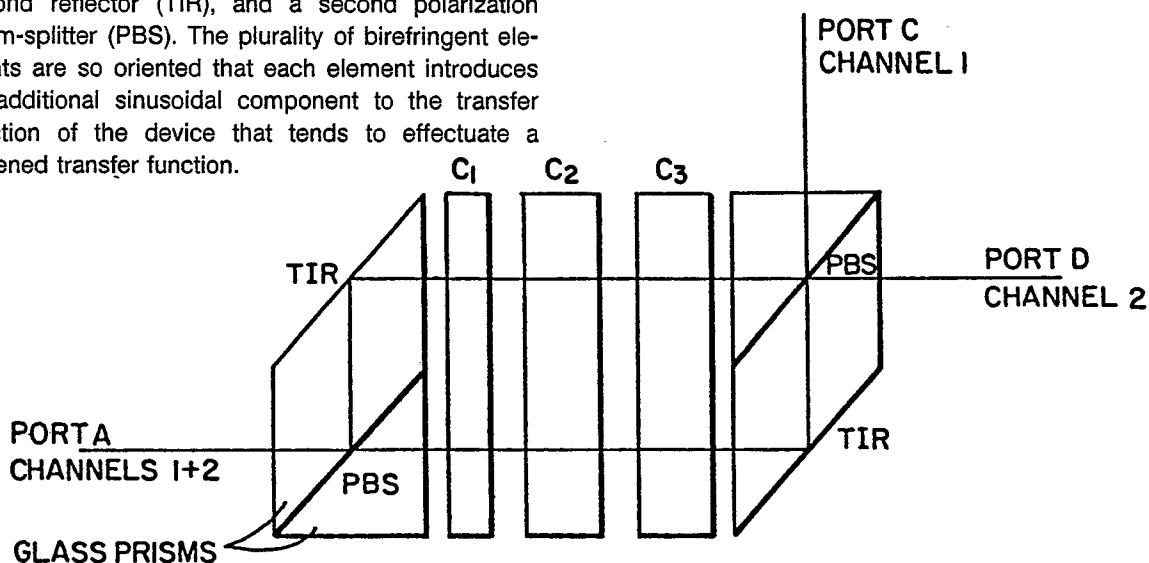
(11) Publication number:

**0 220 691
A3**

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **86114774.2**(51) Int. Cl.⁴: **G02B 27/28**, **G02B 6/34**(22) Date of filing: **24.10.86**(30) Priority: **28.10.85 US 791820**(43) Date of publication of application:
06.05.87 Bulletin 87/19(84) Designated Contracting States:
BE DE FR GB IT NL(88) Date of deferred publication of the search report:
28.09.88 Bulletin 88/39(71) Applicant: **GTE Laboratories Incorporated**
100 W. 10th Street
Wilmington Delaware(US)(72) Inventor: **Carlsen, John W.**
2 Hawthorne Place No. 14J
Boston, MA 02114(US)
Inventor: **Melman, Paul**
111 Brandeis Road
Newton, MA 02159(US)(74) Representative: **Patentanwälte Grünecker,**
Kinkeldey, Stockmair & Partner
Maximilianstrasse 58
D-8000 München 22(DE)(54) **Birefringent optical multiplexer with flattened bandpass.**

(57) A birefringent optical wavelength multiplexer/demultiplexer (Fig. 2) includes a first polarization beam-splitter (PBS), a first reflector (TIR), a plurality of birefringent elements (C₁, C₂, C₃), a second reflector (TIR), and a second polarization beam-splitter (PBS). The plurality of birefringent elements are so oriented that each element introduces an additional sinusoidal component to the transfer function of the device that tends to effectuate a flattened transfer function.

**FIG. 2**

TIR: TOTAL INTERNAL REFLECTION SURFACE
 PBS: POLARIZATION BEAM SPLITTER
 C_n: nth BIREFRINGENT PLATE

EP 0 220 691 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	PATENT ABSTRACTS OF JAPAN, vol. 7, no. 130 (P-202)[1275], 7th June 1983; & JP-A-58 48 018 (MITSUBISHI DENKI K.K.) 19-03-1983 * figure; abstract *	1,3-6	G 02 B 27/28 G 02 B 6/34
Y	GB-A-2 076 994 (WESTERN ELECTRIC CO.) * Figures 1,2,5; abstract; page 5, lines 47-51, 65; page 6, lines 1-108 *	1,3-6	
Y	JOURNAL OF THE SOCIETY OF AMERICA, vol. 54, no. 10, October 1984, pages 1267-1276, New York, US; S.E. HARRIS et al.: "Optical network synthesis using birefringent crystals. I. Synthesis of lossless networks of equal-length crystals" * Abstract, lines 5-8 *	1,3,6	
A	GB-A-2 106 665 (SPECTRON DEVELOPMENTS) * Figures 1,2,4; abstract; page 1, lines 18-24 *	7	TECHNICAL FIELDS SEARCHED (Int. Cl.4) G 02 B H 04 J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07-07-1988	Examiner VAN DOREMALEN, J.C.H.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			